Notice of Allowability	Application No.	Applicant(s)	
	10/089,799	MATSUNAGA, SEIJI	
	Examiner	Art Unit	
	Paulos M. Natnael	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment filed 2/28/05*.

2. ☒ The allowed claim(s) is/are *6-10, renumbered as 1-5*.

3. ☒ The drawings filed on *02 April 2002* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Allowable Subject Matter

1. Claims **6-10** are allowed.

2. The following is an examiner's statement of reasons for allowance: the prior art, Suzuki et al. (U.S. 6,297,854) being the closest reference, discloses vertical and horizontal contour extracting and emphasizing methods, but fails to disclose a combination of the following contour emphasizing circuit, comprising:

a synchronizing means composed of a 1-dot delay circuit and a 1-line delay circuit, for synchronizing the timings of an objective pixel and adjacent pixels in horizontal, vertical, rightward-rising and leftward-rising directions represented by digital video signals;

a contour direction detecting stage for detecting the direction of the pixel whose absolute value of the difference in the luminance is largest among the differences in luminance of the horizontal, vertical, rightward-rising and leftward-rising pixels which have been synchronized by the synchronizing means;

a contour detecting stage composed of an inclined contour luminance optimizing circuit designed so that weighted contour emphasizing values of the luminances of the pixels in the directions detected in the contour direction detecting stage and the luminance of said objective pixel can be determined,

so that new objective pixels are picked out consecutively as the pixel next to the present objective pixel, and so that when the signs of two consecutive contour

emphasizing values are the same, the contour emphasizing values preceding and following these two consecutive contour emphasizing values are adopted as they are, and when the signs of the two consecutive contour emphasizing values differ, the contour emphasizing values preceding and following these two consecutive contour emphasizing values are set to 0; and,

an adding circuit for adding the contour emphasizing values, which have undergone inclined pixel optimizing processing in the contour detecting stage, to the corresponding objective pixels respectively, as in claim **6**;

And, a method of emphasizing the contours of pixels represented by a digital video signal, comprising: selecting an objective pixel out of the pixels represented by the digital video signal, picking out the luminance of the pixel which differs the most from the luminance of the objective pixel from the pixels adjacent to the objective pixel in the horizontal, vertical, rightward-rising and leftward-rising directions;

utilizing the luminance which differs the most from the luminance of the objective pixel to determine contour emphasizing values; selecting a pixel adjacent to the objective pixel as a new objective pixel;

picking out the luminance of the pixel which differs the most from the luminance of the new objective pixel from the pixels adjacent to the new objective pixel in the horizontal, vertical, rightward-rising and leftward-rising directions;

utilizing the luminance which differs the most from the luminance of the new objective pixel to determine contour emphasizing values;

performing inclined contour optimized processing by adopting preceding and following contour values as they are when the signs of two consecutive contour emphasizing values are the same or making the preceding and following contour emphasizing values zero when the signs of the two consecutive contour emphasizing values differ; and,

adding the contour emphasizing values which have undergone the inclined contour optimizing processing to the corresponding objective and new objective pixels respectively, as in claim **10**;

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (571) 272-7354. The examiner can normally be reached on 10:00am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (571)272-7353. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PMN
April 26, 2005

PAULOS M. NATNAEL
PATENT EXAMINER